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Personality Matching Internship Placement System (PMIPS) among Students of a Public Higher Learning Institution

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ABSTRACT

The Personality Matching Internship Placement System (PMIPS) is a web-based system designed to assist students find a place for their industrial training using their personality scores as the basis for choosing the most suitable organisations or departments. This system will help them to choose the right organisations that match the organisation's needs and requirement. The Adapted Waterfall model was used to develop the PMIP system. The evaluation of PMIPS is conducted once the development is completed. There are six constructs used for the evaluation purposes and 30 respondents were involved. The six constructs are ease of use, satisfaction, efficiency, consistency, user interface and usability. Respondents are required to use the system and then they were asked to answer the questionnaire given. As a result of the evaluation, the highest mean score is for the efficiency construct, 4.63(SD=0.49). The results show that the respondents perceived that it is efficient for them to use the system because they are able to see the results of their personality and which company is suitable for their internship placement. Future enhancement for the system includes functions that match the students' personality with the specific job requirement.

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Keyword: *personality, ınternship placement, waterfall model, user ınterface, employability*

INTRODUCTION

Higher learning institutions are often criticised for not providing the right graduates that possess practical knowledge. Obtaining a good tertiary education, however is no longer a guarantee of employment. Barnes *et al*. (2015) and Donald *et al*. (2018) suggested several characteristics that students should be able to develop themselves such as knowledge, skills, abilities and other personal factors. The student must develop the skills, personality and attitude necessary for work before leaving university. Attitude and personality are also critically important in obtaining employment and achieving long-term career success (Orr, Sherony & Steinhaus, 2011). Higher learning institutions, therefore may help students to increase their chances of employability by helping them to develop high confidence, motivation and positive attributes toward achieving goals.

Many scholars recognise that to secure employment, students need to acquire not only the necessary skills and knowledge but also strong and positive personal attributes. Furthermore, their performance at the workplace is also determined by their good personality. The link between the personality theory, along with the qualitative nature and future orientation of the study of personality, presents more challenges in measuring the concept of employability (Batistic & Tymon, 2017; Tymon, 2013). Employers' preferences of students' personality may provide valuable information to universities in preparing them for the job market. It can be used in career development support and counselling practices to improve employability attributes and skills (Potgieter & Coetzee, 2013). Knouse and Fontenot (2008) and Gault *et al*. (2010) further discovered that many employers are interested in students who has strong personal attributes and soft skills than the types of degree, subjects learned or university attended. One of the approaches that higher learning institutions may undertake is to send students to do their practical training at many different organisations.

Internship is a structured and organised industrial training undertaken by students as part of the education programme and is viewed as a transition

period from the academic world to the working environment (Muhamad *et. al*, 2009). Knight and Yorke (2003) perceive internship as 'social practices' and students' ability to secure employment depends on the students' ability to practise the knowledge acquired during their internship. In addition they need to practice the assignment or work given by the employers. Furthermore, Li (2018) and Cook, Parker and Pettijohn (2004) suggested that internship would help the students to better prepare and enhance themselves with the necessary interpersonal skills and personal maturity required in their chosen career. They further argue that students who went for their internship are more likely to find their job faster than their counterparts who did not go for their internship.

With the changes of the current educational landscape, universities have changed into producing more knowledgeable and highly skilled students with good personality. Studies such as Coughlan (2013) and Brook (2017) show there is a major shift in the job market in UK towards requiring many more skilled workers with high level of education. There is a wide range of benefits from hiring more educated employees. Blayney and Blotnicky (2017) and Coughlan (2013) found that those who are educated will produce higher-quality work, increased productivity, better communication and more innovation which are all among the advantages for employers. In Malaysia, higher learning institutions, however, are often criticised for not providing the right graduates that possess practical knowledge whilst academic institutions will defend their right to set educational objectives. Attaining a good vocational degree is no longer a guarantee of employment and students must develop the skills, personality and attitude necessary for work before leaving university.

Orr, Sherony and Steinhaus (2011) proposed two aspects of employability, mainly subject skills and transferable skills. Sound attitude and personality are also critically important in obtaining employment and achieving long-term career success. Most definitions recognise that employability requires not just the possession of skills but also personal attributes, which are aligned to personality theory. This link to personality theory, along with the qualitative nature and future orientation of the definitions, presents yet further challenges to measurement of the concept of employability (Tymon, 2013). Measures of normal personality (Costa & McCrae, 1992) have been shown to predict a wide range of performance

criteria (Barrick *et al*, 2015; Barrick & Zimmerman, 2009; Hurtz & Donovan, 2000).

Job performance is also determined by interest in personality, thus, people's personality preferences related to employability attributes may provide valuable information that managers, career counsellors, industrial psychologists and human resource practitioners could use in career development support and counselling practices to improve a graduate's employability attributes and skills (Potgieter & Coetzee, 2013). Marinas, Igret and Marinas (2018) and Knouse and Fontenot (2008) found that employers are more interested in personal attributes and soft skills than degree classification, subject or university attended. In linking to the personality theory, Heggestad and Kanfer (2000) formatted survey questions using the personality traits. These personality traits include locus of control, need for achievement, need for power, need for affiliation, risk taking propensity, tolerance for ambiguity, goal orientation, and openness to experience and perceived effectiveness. While, Adams (2013) found in the case of 200 surveys in UK not only computer software and programmeming skills are important among the graduates, but additional requirements such as basic teamwork, problem-solving and the ability to plan and prioritise are the most important qualities seek by the companies.

In the case of Malaysia, personal traits such as good leadership and soft skills such as effective communication, problem solving skills, time management and teamwork have become critical as entrance into today's job market (Mai, 2012). In addition to academic knowledge, there is an increasing demand by employers on the applicants to have these skills. In addition, Mai (2012) who studied 107 employers and 359 students from the northern region of Malaysia in Kedah, Perlis and Penang discovered that time management skills are an area where improvements are needed the most by employers. These are followed by skills relating to teamwork, communication, learning and interpersonal skills. Similarly, Ramli *et al.* (2013) who investigated the Malaysian employers' expectations on students' characteristics and the internship programme, concluded that leadership skills are significantly important for future interns to acquire. The students are expected to equip themselves with the soft skills such as leadership and interpersonal skills before commencing their internship programme. They need to be adequately prepared to face the challenges in the working

environment once they have graduated. Ramli *et al*. (2013) also proposed that having high academic achievements does not guarantee meeting the employers' expectation on the intern's competencies during internship and in the real working environment.

Vélez, Giner and Clemente (2017) and Zaccardi, Howard and Schnusenberg (2012) discovered that college students focuse on social networking sites to communicate to future employers and this reflects the their personality traits. Utilising a sample of 250 students from a regional university in Florida, USA, they discovered that students who exhibit more openness, conscientiousness, or extraversion traits are more likely to have good social networking with employers. Moreover, Moghaddam (2011) studied students' perceived internship in providing students with career preparation skills and investigates the impacts of students' personality traits on their perceptions of internship programmes. Based on the rank order of the skills, the findings show that internship students need to acquire or improve their oral communication, self-discipline, and decision making skills. They also rank relatively higher on personal efficiency, academic, and interpersonal skills. Furthermore, Moghaddam (2014) also explored the effects of personality traits on students' perceptions. A total of 800 students were chosen for the survey. The findings suggest personality traits have more impact on the perceptions and expectations of the students in choosing the right internship place.

METHODS

In this paper, we hope to design a web based instrument of evaluation to determine the compatibility of students' personality with the expectations of host organisations. In addition, all data gathered were analysed, processed and transformed into inputs for a Data Base System that can be accessed by industrial training coordinators at UiTM Terengganu. The instrument is labelled as 'Personality Matching Internship Placement System' (PMIPS). This is a web-based system that has been developed for students to help them find a suitable place for their industrial training using their personality score as the basis for choosing the most suitable organisations or department. This system can be used by three groups of users which include students, coordinators and administration. The model used to develop the PMIPS is

the Adapted Waterfall Model. This study was focussed on undergraduate students in Universiti Teknologi MARA, Terengganu. The aim is to simplify the matching process between the student's personality and attitude with the expectations of host organisations by using the PMIPS.

Development of the Personality Matching Internship Placement System (PMIPS) is based on the System Development Life Cycle that uses the adapted Waterfall Model as shown in Figure 1 and Table 1.

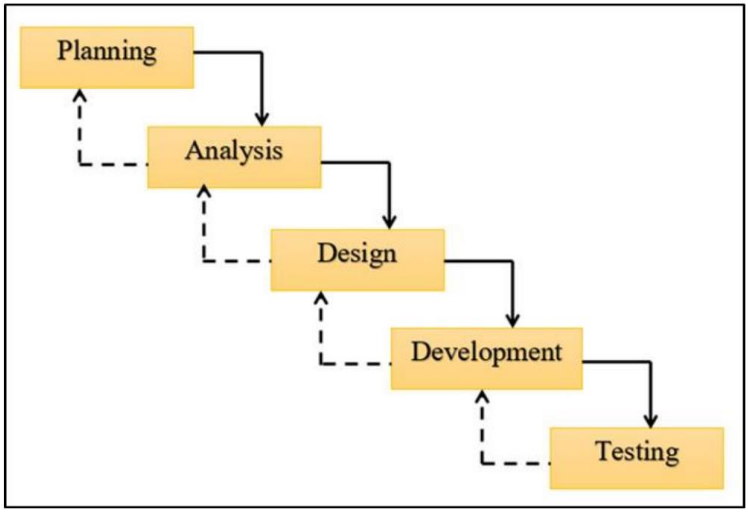

Figure 1: System Development Life Cycle

Table 1: System Development Activities and Outcomes

Project Framework	Activities	Outcomes
Planning phase	• Observe the current system • Interview question is conducted. • Identify current process and problem.	• Current process and problem statement is identified. • The objective also is identified.
Analysis phase	• Identify user and system requirement. • Identify flow of current process. • Conducting an interview with lecture in charge of handling for industrial training.	• Data collected from an interview. • Redefined problem statement. • User and system requirement is identified. • Data collected.
Design phase	• Design Context Diagram • Design Entity Relationship Diagram (ERD) • Design Data Flow Diagram (DFD) • Design User Interface • Process Flow Diagram • Functional Hierarchy Diagram (FHD)	• Context Diagram • Entity Relationship Diagram • Data Flow Diagram • User Interface • Process Flow Diagram • Functional Hierarchy Diagram
Development phase	• Development of the system • Correcting logical and syntax error. o Test system functionality based on users requirements o Test the core functions of the system using test plan o Developers conduct the test based on user requirement	• Language: php • Database: MySQL • Personality Matching Internship Placement System (PMIPS)

Testing phase	• The functionality and usability is tested. o Test overall system's functionality o Evaluate the system with 30 users/ respondents	• Feedback and evaluation from the user. • Improvement of the system.

In addition, the Process Flow Diagram is determined by the information hierarchy of the system site. In this process flow diagram, there are three users which are student, coordinator and administrator. Student able to register and login, take the personality type test, receive and view the personality type result, it is an optional to print result of personality type test and logout. Besides that coordinator able to login, manage student profile, view result of student's personality traits test, generate and print report and logout. Lastly, administrator able to login, manages coordinator profile. Figure 2 shows the Process Flow Diagram for Personality Matching Internship Placement System (PMIPS).

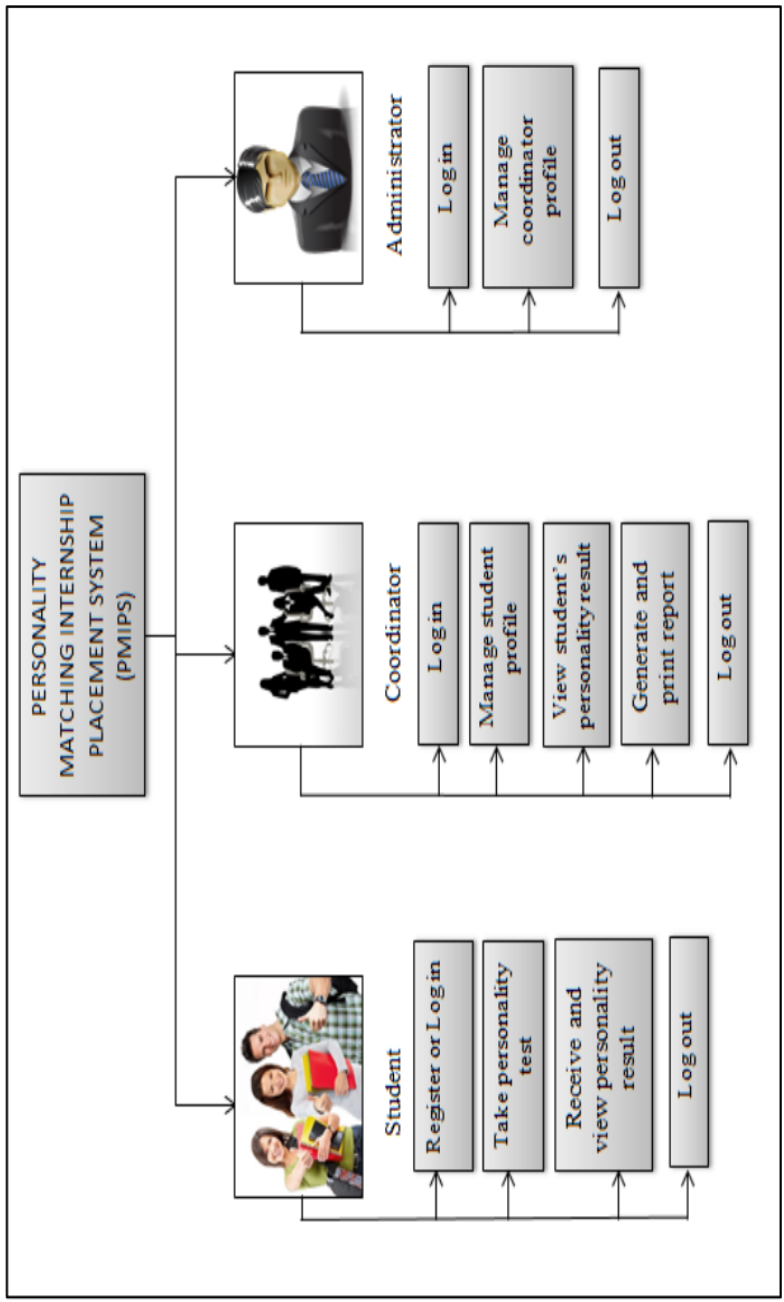

Figure 2: Process Flow Diagram of PMIPS

The Context Diagram is a diagram that defines the relationship of Personality Matching Internship Placement system (PMIPS) with other external entities. It is easy to construct the flow of each of the entities that interact with the system to perform their task and also what system can do for each of the entities. The entities for Personality Matching Internship Placement system (PMIPS) are student, coordinator and administrator. Furthermore, each of the entities has their own task. The first entity is the student whom is able to register and login, take the personality test, receive and view the personality result, an optional to print result of personality type test and logout. The next entity is the coordinator. The coordinator able to login, manages student profile, view results of student's personality type test, generate and print report and logout. Lastly is the administrator entity which is able to login, manage coordinator profile and logout. Figure 3 shows the Context Diagram for the Personality Matching Internship Placement system (PMIPS).

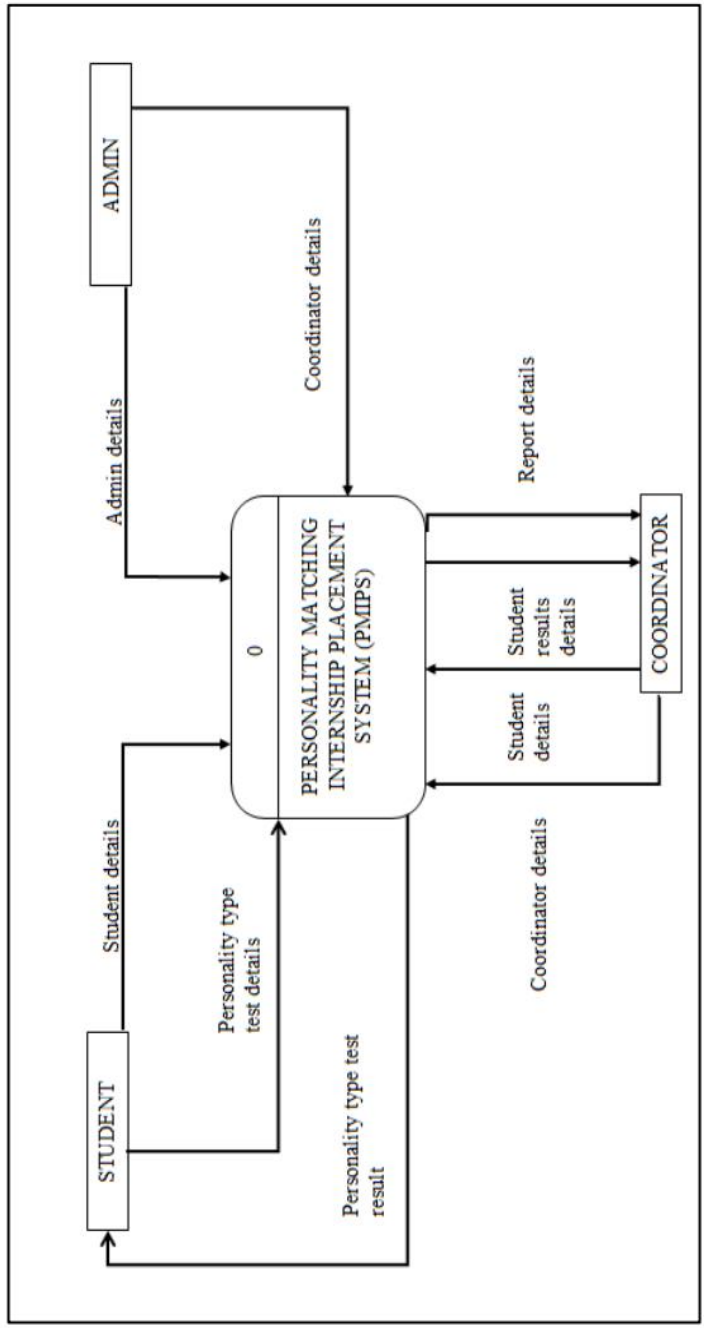

Figure 3: Context Diagram of PMIPS

Next, questionnaires were prepared for the users to evaluate the system. The questionnaires were distributed to 30 respondents to answer the questions after evaluating the Personality Matching Internship Placement system (PMIPS). There are six sections in the questionnaire which are interface, usability, efficiency, ease of use, consistency and satisfaction.

Table 2 shows the sample questionnaire that were distributed to the respondents.

Table 2: Sample Questionnaire Given to Respondents

SECTION A: INTERFACE	
Questions	Sources
A1: The interface of this system is pleasant.	(Source: Lewis, 1995)
A2: I like using the interface of this system.	
A3: Characters on the computer screen is easy to read.	
A4: Overall design of this system is satisfactory.	
A5: The entire button well-functioned.	(Source: Lin et al., 1997)
A6: The position of navigation button is proper.	
SECTION B: USABILITY	
B1: It was simple to use this system	(Source: Lewis, 1995)
B2: I thought there is consistency in this system	
B3: This system has all the functions and capabilities that I expect to have.	
B4: Whenever I make a mistake using this system, I recover easily and quickly	
B5: It is easy to learn to use this system.	
B6: I felt very confident using this system.	

RESULTS AND DISCUSSION

Based on the questionnaire given to the respondents, there are six constructs provided in the questionnaire which are interface, usability, and efficiency, ease of use, consistency and satisfaction. The range of mean falls between 4.16 and 4.51. The highest mean (4.51) is shown by the efficiency construct and the lowest mean equals to 4.16 for consistency construct. The mean scores for all constructs are shown in Figure 4.

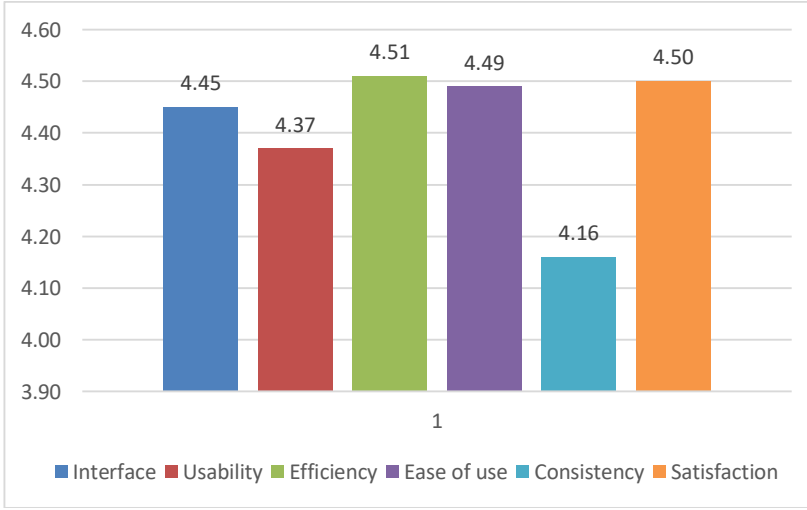

Figure 4: Respondents Evaluation of the PMIP Evaluation System

In addition, the researchers also conducted a multiple regression analysis in order to determine the influence of five predictors (sensation, cognitive, affective, ıntuitive and skills) on the changes of the knowledge acquired by the students during their internship programme. The dependent variable was regressed againts all the predictors using the Stepwise method. The results of the regression analysis produced two models where the second model produced the best results. In this model two predictors, skills and sensation were found to have a positive and significant relationship with the dependent variable knowledge. This is shown by the Beta values (standardised coefficients) of 0.616 for Skills and 0.287 for sensation. The results highlighted the dominant influence of skills acquired by the students on their knowledge whereas 'sensation' has a weaker influence on the knowledge applied by the students during their internship programme. Furthermore, the Tolerance and VIF values showed that there are no collinearity effects on all variables. All results are shown in Table 3.

Table 3: Coefficient Analysis of the Regression Analysis

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Contant) Skills	0.896	0.378		2.370	0.021		
	0.775	0.095	0.720	8.178	0.000	1.000	1.000
2 (Constant) Skills Sensation	0.096	0.429		0.223	0.824		
	0.662	0.095	0.616	7.003	0.000	0.868	1.152
	0.356	0.109	0.287	3.258	0.002	0.868	1.152

a.Dependent Variable: Knowledge

In addition, a model summary of the regression analysis was produced and the best model, i.e. model 2 indicates skills and sensation as the best predictors. In addition, the R Square value of 0.590 which means 59% of changes in the knowledge of students is influenced by the changes in skills acquired by the students and their sensation which is the ability to interpret their environment based on their acute senses. All results are shown in Table 4.

Table 4: Model Summary of the Regression Analysis

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.720[a]	0.519	0.511	0.29477
0.768[b]	0.590	0.577	0.27427

a. Predictors: (Constant), Skills

b. Predictors: (Constant), Skills, Sensation

CONCLUSION

Students of higher learning institutions who are doing their Industrial Training (IT) are facing challenges in applying what they learn in the lecture hall. At present, almost all academic programmes in many universities have an industrial training exercise as a part of academic requirement for their students. Feedbacks from organisations who have taken the students as trainees revealed that many of the students are having challenges in applying the theories and concepts of what they learn in class to the task and job requirements at the respective organisations. In addition, we postulate that the attitude and personality of the students also plays a critical role in matching the student's competency and the host organisation's expectation.

The results of the correlation and regression analysis revealed that the personality dimensions of the students have a positive and significant influence on the knowledge applied by the students during their internship programme. This is especially true for the constructs of sensation and skills where skills are found to be more dominant in influencing the knowledge practised by the students. In this sense, Fulgence (2015) and Branine (2008) found that employers are more interested in personal attributes and soft skills than degree classification, subject or university attended by the applicant. Employers continue to report that soft skills are critically important in obtaining employment and achieving long-term career success.

Currently, students are required to find the organisations for their internship placement manually without taking into consideration their personalities that can be matched with the organisation's expectation. To address this issue we have design an evaluation system to evaluate the students' compatibility before they embark on their practical training using sensation, intuitive, cognitive, and affective test based on their personality and attitude orientation (Handelsman, 2011; Williams & Villanueva, 2011). Finally, we hope to develop an instrument in determining the suitability of personality and attitude of students who want to conduct industrial training. It also aims to create a simple and complete assessment system during the matching process.

We have designed a comprehensive evaluation instrument that we hope to accurately gauge the students' compatibility with the requirements

of the host organisations that are able to accept the students from UiTM Terengganu. Preliminary results show that on average users of this system are highly satisfied with the highest score given for 'efficiency' with a score of 4.51 (maximum score of 5.00) and the lowest score is given for consistency with a score with 4.16. These results indicate that the users are highly satisfied when using the system.

The results of this evaluation will guide academicians to improve their teaching pedagogy, improved design of the teaching modules and evaluation of students' competency before they embark on their industrial training. Furthermore, a comprehensive hands-on classes and workshops focusing on the hard skills, cognitive and affective competency required during their industrial training will be taught to the students, six (6) months before the students begin their industrial training. In addition to theories and concepts, 60% of these classes and workshops will be conducted using a 'student–centred' approach using simulations, games and physical exercises. The core output of this study is a validated evaluation instrument that will be able to match the student's sensation, intuitive, personality and attitude with the host organisation's expectations.

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